

## Stackfit Library Version 1.00 Reference Guide

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**1 FUNCTION DESCRIPTION****1.1 PreSelect**

```
int PreSelect(const int anzahlPunkte, double* x, double* y)
int PreSelect(const int anzahl_R_Punkte, double* x_R, double* y_R,
             const int anzahl_T_Punkte, double* x_T, double* y_T)
```

**Description**

This Function finds good starting values of free parameters for given measurement of reflexion and/or transmission.

**Parameters**

<i>anzahlPunkte</i>	The number of points in arrays <i>x</i> and <i>y</i> .
<i>x</i>	Array of wavelengths
<i>y</i>	Array of reflexion or transmission
<i>anzahl_R_Punkte</i>	The number of points in arrays <i>x_R</i> and <i>y_R</i> .
<i>x_R</i>	Array of wavelengths for reflexion
<i>y_R</i>	Array of reflexion
<i>anzahl_T_Punkte</i>	The number of points in arrays <i>x_T</i> and <i>y_T</i> .
<i>x_T</i>	Array of wavelengths for transmission
<i>y_T</i>	Array of transmission
<b>Returns</b>	
<b>E_FIT_OK</b>	Successfull end of PreSelect()
<b>E_FIT_PRESELECT_FAIL</b>	No results: PreSelect() has failed
<b>E_FIT_INTERVALL</b>	Wrong fit-intervall: Larger than measurement
<b>E_FIT_STARTTHICKNESSES</b>	Bad startvalues for thicknesses
<b>E_FIT_START_OSZILL_PARAMETERS</b>	Bad startvalues for material parameters
<b>E_FIT_MEMORY</b>	Memory Error

**Comments**

PreSelect() should be used in case of quite poor or uncertain start parameters. By PreSelectMin() and PreSelectMax() one can change the preloaded borders of the area in which PreSelect() looks for the Minimum of the Deviation of  $R/T_{meas}$  from  $R/T_{calc}$  (see there).

Do not use PreSelect() if there are more than six free parameters.

**1.2 Optimize**

```
int Optimize(const int anzahlPunkte, double* x, double* y);
```

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```
int Optimize(const int anzahl_R_Punkte, double* x_R, double* y_R,
            const int anzahl_T_Punkte, double* x_T, double* y_T)
            ( $\rightarrow$  not yet implemented)
```

**Description**

This Function optimizes free parameters like thicknesses and/or material parameters in a layer stack for given measurement of reflexion or transmission.

**Parameters**

<i>anzahlPunkte</i>	The number of points in arrays x and y.
<i>x</i>	Array of wavelengths
<i>y</i>	Array of R or T

**Returns**

<b>E_FIT_OK</b>	Successful end of Optimize()
<b>E_FIT_OPTIMIZE_FAIL</b>	No results: Optimize() has failed
<b>E_FIT_OPTIMIZE_POOR</b>	Uncertain Results: Optimize() has found a solution which does not fit the measurement very well.
<b>E_FIT_OPTIMIZE_TIMEOUT</b>	Too much Iterations: Results uncertain
<b>E_FIT_INTERVALL</b>	Wrong Fit-Interval: Larger than measurement
<b>E_FIT_STARTTHICKNESSES</b>	Bad startvalues for thicknesses
<b>E_FIT_START_OSZILL_PARAMETERS</b>	Bad startvalues for material parameters
<b>E_FIT_MEMORY</b>	Memory Error

**Comments**

Optimize() needs startvalues not too far away from the Optimum. If this is not the case, use PreSelect() before. Optimize() will fail if the Reflexion or Transmission are unsensitive to changes in one or more free parameters, f.e. the thickness of the Alu-Layer in CDRW, which therefore should be fixed. Using SetPrecision() one can change the precision of the Integration routines (also for PreSelect()).

**1.3 SetPreSelectMin**

```
int SetPreSelectMin(double x)
```

**Description**

Setting the left borders of the PreSelect-Search: If x = 0.8, PreSelect() will begin with setting all free parameters to 80 percent of the loaded values.

**Parameters**

<i>x</i>	A double between 0.1 and 1 representing the left percent/100 - border
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**Returns**

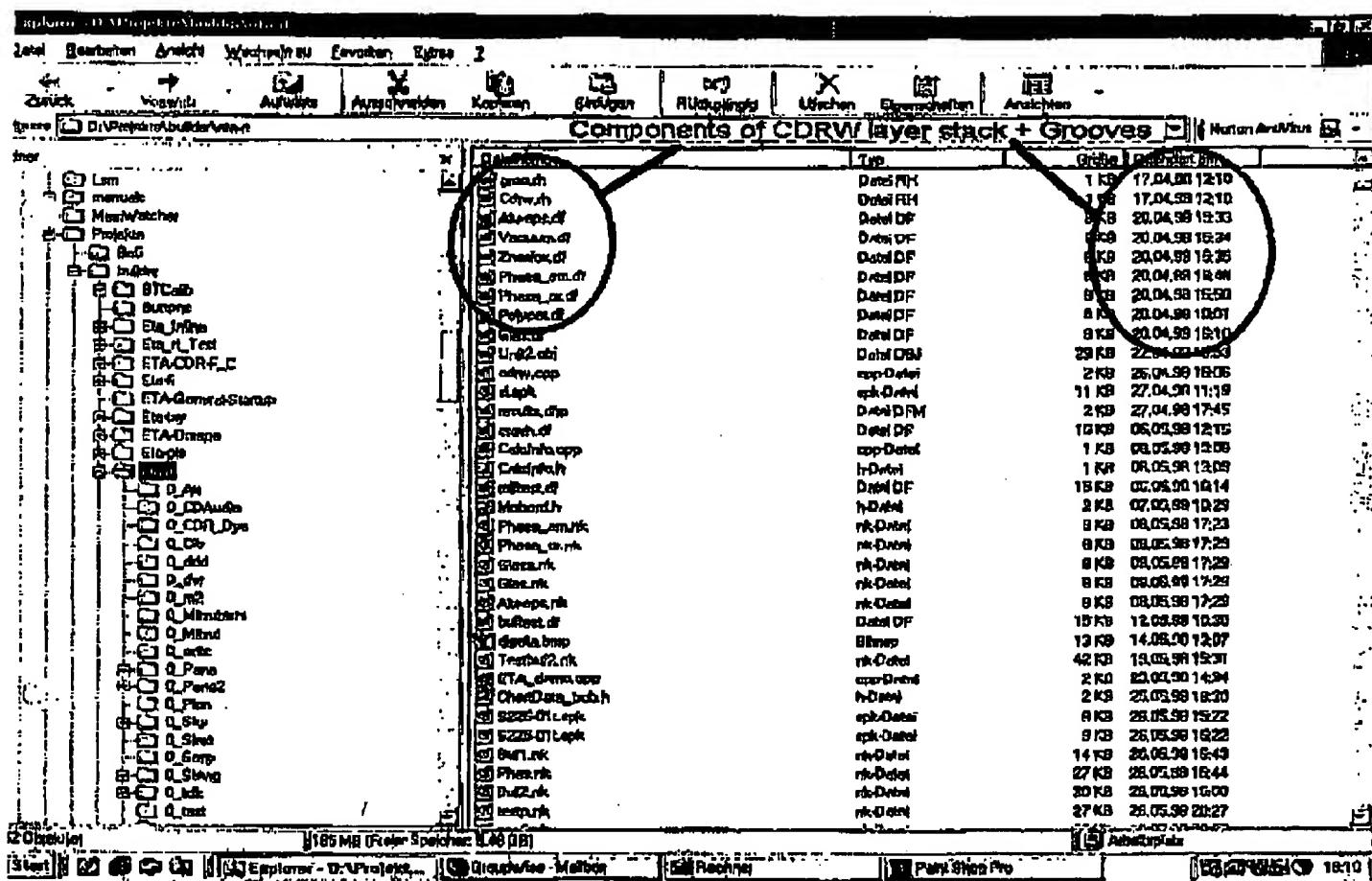
<b>E_FIT_OK</b>	Successful end of SetPreSelectMin()
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**Comments**

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## Screenshots



*Screenshots*

